A REDESCRIPTION OF THE GENUS *NEOCARVENTUS* (HEXAPODA : HEMIPTERA : ARADIDAE) AND A DESCRIPTION OF A NEW SPECIES FROM NORTHLAND, NEW ZEALAND

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Abstract: The genus *Neocarventus* Usinger and Matsuda, is redescribed and *Neocarventus uncus* sp.n. from leaf-litter in the Wharawara, Puketi, and Waipoua State Forests, Northland, New Zealand is described and figured.

Specimens of this new species of Carventinae (Hemiptera : Aradidae) were encountered while determining aradids from leaf-litter samples in the collections of the Entomology Division, DSIR, Auckland (NZAC), and the Auckland Institute and Museum (AMNZ). This remarkable bug, although clearly *Neocarventus* differs in many significant respects from *N. angulatus* Usinger & Matsuda, particularly in the enormous development of the metathoracic spines in the male, and in the most distinctive arrangement of tergal disc sclerites in both sexes. Usinger and Matsuda's (1959) characterisation of the genus *Neocarventus* was based upon two male specimens of *N. angulatus*. The discovery of an additional species has necessitated some revision of the definition. A more flexible definition, incorporating female characters is given.

Prior to description, the pale incrustation, characteristic of the Carventinae, was removed using a fine mounted needle.

The holotype and allotype are deposited in the New Zealand Arthropod Collection, Entomology Division, DSIR, Mount Albert, Auckland.

Family ARADIDAE

Subfamily CARVENTINAE (Usinger, 1950)

Genus **Neocarventus** Usinger & Matsuda, 1959

Changes from Usinger and Matsuda's original description are indicated by italics.

Apterous. *Elongate oval to subrectangular in body form.* Surface with a thin pale incrustation, particularly extensive on head, thoracic sutures and connexival segments.

Head about as wide as long; eyes small; anterior process prominent, the clypeus narrowing apically, with thick genae exceeding apex and forming a small cleft. Antenniferous tubercles short, blunt, conical. Postocular region of head not exceeding lateral margin of eyes; neck constricted. Antennae longer than head, but not excessively long; *first segment longest exceeding apex of head by half its length, second segment shortest, third and fourth segments subequal.* Rostrum slender, especially near base, arising from a closed atrium well behind apex of clypeus.

Pronotum distinctly shorter then head, collar dorsally distinct, ring-like, with a lateral tubercle, with a ring-like depression behind; disk deeply impressed behind this: hind margins produced into a short triangular projection posteriorly, anterior margin subcontiguous with tubercles on collar; anterior angles obtuse; lateral margins flaring posteriorly and produced as acute lobes.

Mesonotum *as long or slightly longer at middle as pronotum,* produced prominently backwards into a medial acute lobe *reaching or almost reaching the anterior margin of the basal abdominal segments: anterior margin incised posteriorly forming an anteriorly directed median lobe:* lateral margins flaring posteriorly and produced as *acute lobes.*

Metanotum divided into two by the mesonotal lobe, *strongly produced posterolaterally into distinct elevated spines in male, and rounded lobes in female.*

Basal abdominal tergites strongly elevated anteriorly, *fused medially, at either side a distinct transverse suture separating first and second segments.* Abdominal disc distinct and moderately elevated at middle; with distinct anterior dorsal abdominal scent gland opening displaced posteriorly; median and posterior scent gland openings progressively reduced but discernible.

Connexivum slightly reflexed; connexival segments subquadrate at middle, the plates of second and third segments fused, reaching forward to hind angles of metanotum: *spiracles on second, third and fourth segments ventral, remainder lateral. Pattern of glabrous areas distinct, conforming to the 2:1:1 type of Usinger & Matsuda (1959).*

Undersurface smooth and polished on thorax and abdomen, without punctures or granules, collar distinct, pro-, meso-, and metasterna completely fused: metasternum and first visible abdominal ventrite fused but suture discernible, other abdominal segments with distinct sutures. Legs with distinct glabrous trochanters, surface of legs distinctly granular: *pretarsi with distinct pulvilli and setose parempodia (Goel & Schaefer 1969). Pattern of glabrous areas 2:2:1*

Male terminalia. Seventh abdominal tergite strongly elevated at middle. Eighth segment lobes distinctly angulate posteriorly, short, not nearly reaching apex of genital capsule, produced upwards and outwards as curved spines. Pygophore enormously developed, produced posteriorly into two very large rounded lobes with deep depression between, a large median lobe is directed ventrally.

Female terminalia. Seventh ventral segment a bilobed plate, each plate strongly obliquely carinate; about three times as long as preceeding segment at middle, seventh connexival segment with conspicuous lobes. Eighth segment fully exposed across its width above, with lateral lobes not reaching tip of ninth segment, spiracles laterally positioned.

TYPE SPECIES. *Neocarventus angulatus* Usinger & Matsuda.

Neocarventus uncus sp. n. (Figs. 1-5)

Head. About as long as wide across eyes (male 0.67 : 0.70 mm, female 0.72 : 0.75 mm); anterior process reaching middle of first antennal segment; genae rounded at apices, extending beyond apex of clypeus, forming a narrow notch in front of the latter, finely granulate: antenniferous tubercles, short, thick, directed slightly laterad, apices acutely rounded; eyes located distinctly in front of middle of lateral margins of head; postocular lateral margins briefly subparallel then regularly narrowed posteriorly, coarsely granulate; a pair of large laevigate suboval tubercles on either side of posterior median longitudinal ridge. Antennae about 1½ X as long as head, granulate; relative length of first to fourth segments 0.31 : 0.20 : 0.28 : 0.30 mm (both sexes), first segment narrowed at basal one third, not granulate, then equally thickened anteriorly, apex rounded; second segment slightly curved at base, gradually thickened anteriorly, apex rounded; third segment pedunculate at base, then gradually thickened anteriorly, apex rounded; fourth segment fusiform, sparsely pubescent. Rostral atrium with a narrow slit. Rostrum short, not reaching posterior margin of head; rostral groove widened at middle, coarsely granulate on either side of groove (Fig. 2).

Thorax. Pronotum about 2½ X as wide at base as long at middle including collar, (male 1.10 : 0.42 mm, female 1.20 : 0.47 mm); collar distinct, glabrous, ring-like, lateral extremities with a large tubercle on dorsal surface; ring-like depression behind collar; upper surface glabrous, continuous with median longitudinal groove which does not reach the posterior margin; anterior margin straight but rectangularly incised on either side of collar; anterolateral angles obtuse; lateral margins straight; posterior margin broadly roundly produced posteriorly at middle; posterior angles acute; upper surface with laevigate glabrous subtriangular plates at either side of longitudinal groove, posteriorly medially united in female, with further laevigate glabrous subovoid callosities extending transversely to near lateral margin; anterior, lateral and posterior margins depressed and granular.

Mesonotum about 3 X broader than long (male 1.35 : 0.42 mm, female 1.52 : 0.47 mm), with a large medial glabrous elevated and posteriorly directed subtriangular plate extending from anterior margin to touch the posterior margin of metanotum, anterior margin of this plate incised posteriorly forming an anteriorly directed median lobe; anterior margin curved anteriorly from middle; suture between mesonotum and pronotum deep; lateral margins sinuate, granular, flaring posterolaterally to very acute posterior angles; posterior margins straight, granular, until connecting with large median lobe; upper surface with granules and callosities.

Metanotum divided by median mesonotal lobe; lateral margins with remarkable large elevated, granular, posterolaterally directed spines in male, small rounded lobes in female; anterior margins straight, then depressed along median projection of mesonotum, posterior margin strongly elevated medially, broadly sinuate.

Abdomen. Narrowing posteriorly in both sexes, relative width at posterior angles of third to seventh connexival segments 1.52 : 1.52 : 1.40 : 1.22 : 1.17 mm in male, 1.95 : 1.92 : 1.80 : 1.60 : 1.22 mm in female. First and second tergal segments fused, strongly elevated anteriorly, depressed at middle, with a straight medial longitudinal carina extending from anterior to posterior margins; anterior margin broadly sinuate, extremities produced anteriorly separating thoracic from connexival segments; posterior margin well defined from succeeding segments by a deep anteriorly curved suture; upper surface with distinct transverse suture on either side of medial depression extending to a deep pit near lateral extremity, anterior to this suture an

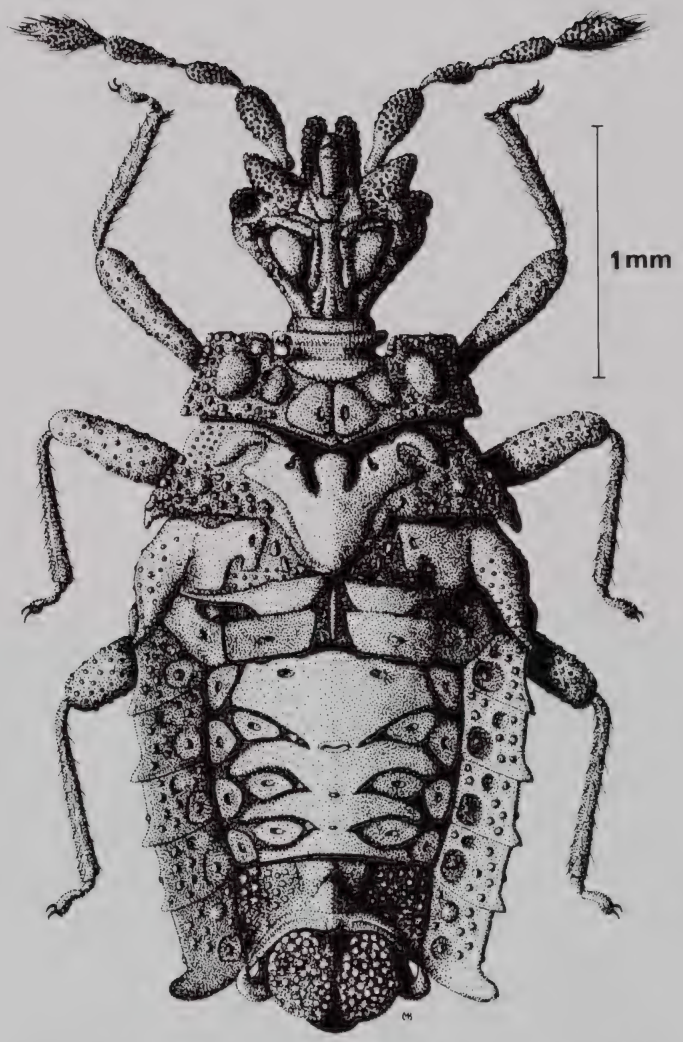
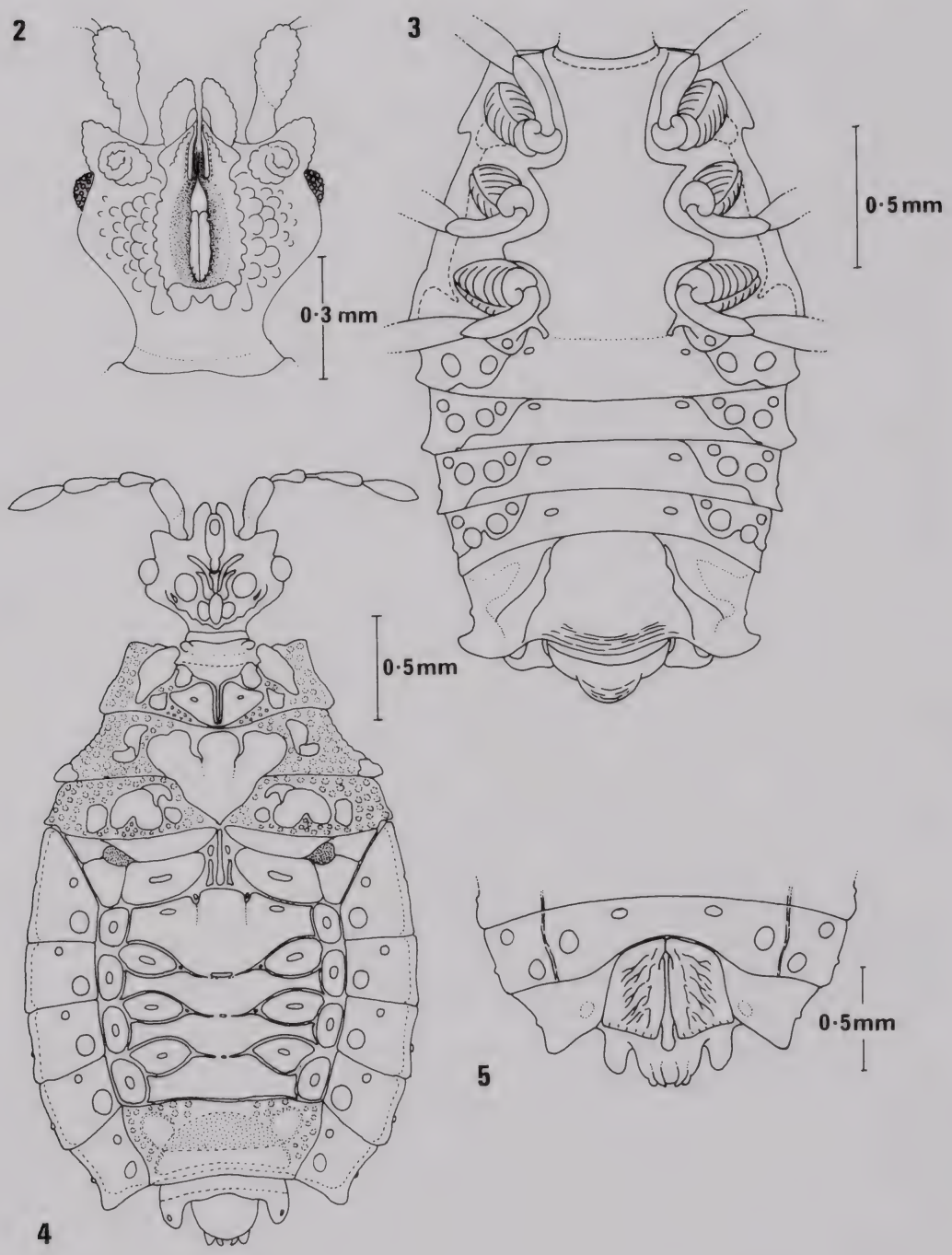


Fig. 1. *Neocarventus uncus* sp.n. Male holotype. Dorsal.

elongate laevigate glabrous tubercle, posteriorly with a subrectangular laevigate glabrous plate. Tergal disc (Usinger & Matsuda 1959) glabrous, medially elevated, lateral row of tergal patterns well defined from each other, each with a medial oval depression; sublateral tergal patterns distinct on segments IV to VI, angular in male, oval in female, each with medial oval depression, sutures, narrow in female, terminating adjacent to medial scent gland openings; first reduced gland placed between second sublateral tergal patterns, second and third glands vestigial, placed between third and fourth sublateral tergal patterns respectively; anterior margin with anteriorly directed small median lobe, well defined from preceeding segments by a deep suture; posterior margin sinuate with deep suture. Connexivum reflexed, granulate, second and third segments fused, subsequent segments subrectangular, each with a pair of laevigate round tubercles, of which the posterior is always the larger; posterior angles of third to sixth segments with angular lateral projections in male, rounded in female.



Figs. 2-5. *Neocarventus uncus* sp.n. 2. Male holotype. Head, ventral. 3. Male holotype. Ventral. 4. Female allotype. Dorsal. 5. Female allotype. Terminalia, ventral.

Male terminalia. Seventh tergal abdominal segment in male very strongly elevated posteriorly and medially, subrectangular glabrous area extending medially from anterior to posterior margin, remaining area with granules and callosities, ventrally, a broad subrectangular glabrous plate, elevated posteriorly (Fig. 3). Seventh connexival segment with large strongly elevated rounded lobe behind spiracle, extending beyond eighth segment lobes, with rounded tubercles conforming with other connexival segments. Eighth segment lobes strongly developed into dorsolaterally curved spines beyond lateral spiracle. Ninth segment large, broad, strongly granulate, conspicuously divided into two posteriorly directed lobes with deep depression between, a rounded median lobe produced ventrally.

Female terminalia. Seventh tergal abdominal segment subrectangular, but narrowing posteriorly, anterior and lateral margins sinuate, posterior margin slightly rounded anteriorly; medially elevated, with complex pattern of fine granules and glabrous areas, but with large granules along lateral third of anterior margin and lateral margin; posterior margin with transverse carinae. Seventh connexival segment with slight rounded lateral lobe behind spiracle. Ventral bilobed plate about 3 X as long as preceeding segment at middle, each lobe strongly obliquely carinate (Fig. 5). Eighth segment conspicuously exposed across its full width above, with inwardly curved lobes bearing spiracles on lateral margins, not reaching apex of ninth segment. Ninth segment strongly narrowed posteriorly.

Colour. Overall ferruginous red: tubercles on collar, margin of mesonotal lobe, posterior basal tergites, and dorsal scent gland area on tergal disc, all deep brown to black: mesonotal lobe, and posterior basal tergite, pale brown to yellow.

Measurements. All comprise means of 9 males, 4 females.
Length. Male 3.2 mm. Female 3.91 mm. Maximum width. Male 1.53 mm. Female 1.95 mm.

TYPE SPECIMENS. Holotype male. Wharawara State Forest, Northland, ex rotten log, 10.X.1974, J.C. Watt (NZAC). Allotype female. Same data as holotype (NZAC). Paratypes, 8 males, 1 female. Same data as holotype (NZAC).

Additional paratypes. Puketi S.F., Northland, litter 1 male, 21.I.1972, G.W. Ramsay (NZAC). Waipoua S.F. 1km E of HQ. 1 male, 15.IV.1980, J.C. Watt (NZAC). Mt. Camel Peninsula, valley W. side, Mangonui Co, P/S sample 1399 1 female, P/S sample 1401, 1 male 1 female, 20.X.1982, K.A.J. Wise & R.F. Gilbert (AMNZ).

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